

REMARKS

The objections and § 112 rejections have been addressed by accepting the examiner's suggestions, without narrowing the scope of the claims. The examiner's comments are appreciated, and withdrawal is requested.

Claims 1-2, 4, 7, 9-10, 12 and 15 stand rejected under § 103 on the basis of Hubis and Kitamura et al. The claims have been amended to overcome this rejection, and applicants traverse because the references do not disclose or suggest, alone or in combination, one controller which manages a paging allocation or a mirror area in another controller.

Hubis discloses a cache mirroring method in a pair of controllers. Each controller 104-1 and 104-2 has caches 112-1 and 112-2 having a read cache 114-1, 114-2, a write cache 116-1, 116-2 and a write mirror cache 118-1, 118-2, as shown in Figs. 1 and 2 and described in column 1, lines 11-60. The write mirror operation is performed by a "mirror copy" command over the backend bus 110, as seen in column 3. Hubis discloses a hierarchy saver system having a high-level saver 110, middle level saver 120 and low-level saver 130 for delivery of contents. As shown in Fig. 12, each saver has a mirror management table 35. As described in column 14, lines 4-44, the mirror management table 35 stores content items to be mirrored, mirroring conditions, and the storage location of the archive.

One feature of the present invention is high speed mirroring by acquiring a mirror page in a mirrored controller without mutual communication. In order to attain this feature, a first controller of a pair of controllers has a mirror management table for mirror

areas in the second controller, and the second controller has a mirror management table for mirror areas in the first controller. The first controller acquires a storage page of the mirror area in the second controller by referring to the mirror management table, and copies the write data to the acquired page when the first controller receives write data. That is, one controller manages a paging allocation of a mirror area in another controller.

Hubis fails to disclose the mirror management table and acquisition of a storage page of the mirror area in another controller by referring to the table. Kitamura discloses a mirror management table, but this mirror management table is for allocation of a storage page in the mirror area of another controller. Further, Kitamura fails to acquire a storage page of the mirror area in another controller by referring to the table, as in the present invention. Accordingly, withdrawal of the rejection of independent claim 1, dependent claims 2, 4, independent claim 9, and dependent claims 10, 12 and 15 is also respectfully requested. Withdrawal of the rejection of claim 7 is requested for this reason, and because while Hubis discloses a backend bus, it does not disclose a node channel for direct communication, as in claim 7.

Claims 3 and 11 stand rejected under § 103 on the basis of Hubis, Kitamura et al. and Tam et al. Applicants traverse this rejection for the reasons given with respect to independent claims 1 and 9, respectively. Hubis and Kitamura et al. have been discussed. Tam et al. merely releases an acquired page in a distributed share memory system. Withdrawal of this rejection is respectfully requested.

Claims 5 and 13 stand rejected under § 103 on the basis of Hubis, Kitamura et al. and Beardsley et al. Applicants traverse this rejection for the reasons given with respect to independent claims 1 and 9, respectively. Hubis and Kitamura et al. have been discussed, and Beardsley et al. merely issues an I/O inhibiting command to a host from a storage controller when the storage controller fails. Withdrawal of this rejection is also requested.

Claims 6 and 14 stand rejected under § 103 on the basis of Hubis, Kitamura et al. and Rowson. Applicants traverse this rejection for the reasons given with respect to independent claims 1 and 9, respectively. Hubis and Kitamura et al. have been discussed, and Rowson merely discloses an ATM packet for writing burst data. Withdrawal is requested.

Claims 8 and 16 stand rejected under § 103 on the basis of Hubis, Kitamura et al. and Li et al. Applicants traverse this rejection for the reasons given with respect to independent claims 1 and 9, respectively. Hubis and Kitamura et al. have been discussed. Li discloses only DMA transfer. Withdrawal of this rejection is requested.

For the foregoing reasons, applicants believe that this case is in condition for allowance, which is respectfully requested. The examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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